UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/674,922	09/30/2003	Xiaohui Li	TI-36347 (1962-08600)	5183

23494   7590   06/05/2007
TEXAS INSTRUMENTS INCORPORATED
P O BOX 655474, M/S 3999
DALLAS, TX 75265

EXAMINER
BOAKYE, ALEXANDER O

ART UNIT	PAPER NUMBER
2616	

NOTIFICATION DATE	DELIVERY MODE
06/05/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

uspto@ti.com
uspto@dlemail.itg.ti.com

	Application No.	Applicant(s)
Office Action Summary	10/674,922	LI, XIAOHUI
	Examiner	**Art Unit**	
	ALEXANDER BOAKYE	2616	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 September 2003*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,6-8,10,15 and 16* is/are rejected.

7)☒ Claim(s) *3-5,9,11-14,17-20* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____ .

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____ .

DETAILED ACTION

Claim Rejections - 35 USC § 102

1.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 16 is rejected under 35 U.S.C. 102(e) as being anticipated by Long et al.

(US Patent # 6,804,267).

. Regarding claim 16, Long teaches an ADSL communication system

(Fig. 11) that comprises: a central office transceiver (CO modem) configured

to transmit during an initialization phase a sequence of symbols carrying a

pilot signal, the pilot signal being modulated to indicate at least two symbol

types (column 10, lines 17-27 and column 10, lines 45-53); and a remote

transceiver (remote modem) coupled to the central office transceiver (CO

modem) by a communications channel (bi-directional two-wire transmission),

wherein the remote transceiver is configured to measure a sequence of

unsynchronized symbols, and further configured to determine an offset

between an unsynchronized symbol boundary and a pilot signal transition

(column 12, lines 55-67).

Claim Rejections - 35 USC § 103

2.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 2, 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Long et al. (US Patent # 6,724,849) in view of Takahashi (US patent # 5,127,027)..

Regarding claim 1, Long teaches a method of achieving symbol

synchronization (Fig. 6) the method comprising: receiving (602) a pilot signal

(Pilot Tone) having at least two phase states, wherein the pilot signal

transitions between phase states only on a symbol boundary, and wherein the

transitions occur not more than once for every two symbols (column 3, lines 9-

14 and column 6, lines 62-64); measuring the pilot signal as a sequence of

measured symbols (column 5, lines 41-45); calculating a phase difference

(604) between adjacent measured symbols (column 6, lines 52-54);

determining a coarse alignment offset (column 5, lines 57-60 and column 6, lines 25-32); and applying the coarse alignment offset to align a boundary between measured symbols with a pilot signal transition (lines 4-12 of the abstract).

Long differs from the claimed invention in that Long does not teach detecting a phase difference greater than a predetermined threshold. However, Takahashi from the same field of endeavor discloses a phase difference greater than a predetermined threshold (lines 7-12 of the abstract). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Long to include detecting a phase difference greater than a predetermined threshold such as the one taught by Takahashi with motivation being that it provides capability to improve the performance of the system, thus enhancing line quality.

Regarding claim 2, Long further teaches training a time domain equalizer (510) after applying the course alignment offset (lines 4-12 of the abstract); determining a fine alignment offset after training the time domain equalizer (column 5,lines 57-60 and column 6, lines 25-32)); and applying the fine alignment offset to more accurately align boundaries between measured symbols with boundaries between received symbols (lines 4-12 of the abstract).

Regarding claim 6, Long further teaches acquiring a sample clock from a

second, unmodulated pilot signal received concurrently with the first pilot

signal (column 5,lines 34-45).

Regarding claim 7, Long teaches that a first of the two pilot phase states

is indicative of a symbol sent during a period of near-end cross-talk (NEXT)

from a time-compression multiplexing integrated services digital network

(TCM-ISDN) communication on another channel (column 3, lines 9-17),

wherein a second of the two pilot phase states is indicative of a symbol sent

during a period of far-end cross-talk (FEXT) from the TCM-ISDN

communication, and wherein the first and second of the two pilot phase states

are separated by 90° (column 2, lines 8-29 ; $FEXT_R$ Symbol and $NEXT_R$

Symbol indicated in Fig.3 are separated by 90 degree).

Regarding claim 8, Long as modified by Takahashi teaches all the claimed

limitations as previously discussed wit respect to claims 1 and 7 above, but fails to

explicitly teach that the predetermined threshold is about 22.5 degree. However, one of

ordinary skill in the art would have been motivated to incorporate predetermined

threshold of 22.5 degree into the communication network in order to improve the system

performance. Therefore, it would have been obvious to one of ordinary skill in the art

the time the invention was made to incorporate the feature of a predetermined threshold

of 22.5 degree into the system of Long as modified by Takahashi in order to be able to

improve the system performance.

3.   Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Long et

al. (US Patent 6, 804,267) in view of Takahashi (US patent 5,127,027).

Regarding claim 10, Long teaches a modem (Fig. 11) that comprises:

a processor (98) adapted to couple to a channel to receive symbols, wherein

the channel experiences alternate intervals of near-end cross talk (NEXT) and

far-end cross talk (FEXT), and wherein during an initialization sequence,

symbols received from the channel include a pilot tone having phase states

indicative of symbols sent during FEXT intervals ("FEXT symbols") and

symbols sent during NEXT intervals ("NEXT symbols") (column 17, lines 8-30)

; and a memory (96) coupled to the processor and configured to store

executable instructions, wherein the executable instructions configure the

processor to: measure (122) a sequence of symbols (column 12, lines 55-56);

calculate phase differences between adjacent symbols (column 12, lines 60-

63); and determine an offset for symbol alignment (column 12, lines 60-63)

Long differs from the claimed invention in that Long does not teach

detecting a phase difference greater than a predetermined threshold.

However, Takahashi from the same field of endeavor discloses a phase

difference greater than a predetermined threshold (lines 7-12 of the abstract).

Therefore, it would have been obvious to one of ordinary skill in the art at the

time the invention was made to modify the teachings of Long to include

detecting a phase difference greater than a predetermined threshold such as

the one taught by Takahashi with motivation being that it provides capability to

improve the system performance, thus enhancing line quality.

4.   Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Long et

al. (US Patent 6, 804, 267).

        Regarding claim 15, Long teaches all the claimed limitations as previously

discussed wit respect to claim 10 above, but fails to explicitly teach that the

predetermined threshold is about 22.5 degree. However, one of ordinary skill in the art

would have been motivated to incorporate predetermined threshold of 22.5 degree into

the communication network in order to improve the system performance. Therefore, it

would have been obvious to one of ordinary skill in the art the time the invention was

made to modify the teachings of Long to include the feature of a predetermined

threshold of 22.5 degree in order to be able to improve the system performance.

Allowable Subject Matter

5.   Claims 3-5, 9,11-14,17-20 objected to as being dependent upon a rejected base

claim, but would be allowable if rewritten in independent form including all of the

limitations of the base claim and any intervening claims.

Conclusion

6.   The prior art made of record and not relied upon is considered pertinent to

Applicant's disclosure.

        Strait (US Patent # 6,438,186) discloses carrier phase derived symbol timing.

7.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Alexander Boakye whose telephone number is (571)

272-3183. The examiner can normally be reached on M-F from 8:30am to 6:00pm. If

attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Chi Pham, can be reached on (571) 272-3179. The Fax number is (571)

273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or PUBLIC PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Any

inquiry of a general nature or relating to the status of this application or proceeding

should be directed to the **Electronic Business Center (EBC)** numbers at 866-217-

9197 and 703-305-3028.

Alexander Boakye

Patent Examiner

5/29/07